

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Canceled)
2. (Currently Amended) The method of claim [[1]] 11, wherein the remote storage is located at a remote site and wherein each slave storage unit is stored within a storage system attached to one slave controller.
3. (Canceled)
4. (Currently Amended) The method of claim [[3]] 11, wherein the master controller also comprises one slave controller managing one slave storage unit including data to transmit to the remote storage.
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Currently Amended) The method of claim [[6]] 11, wherein the copy operation from the remote storage to the remote backup storage comprises a virtual copy operation.
9. (Currently Amended) The method of claim [[1]] 11, wherein the remote storage comprises a plurality of remote storage systems, wherein each remote storage system is coupled to one or more remote storage controllers, wherein each slave controller transmits data to one or more remote storage controllers to store the slave storage unit data in the remote storage system coupled to the remote storage controller, and wherein each storage unit comprises a volume of data.

10. (Canceled)

11. (Currently Amended) A method for forming a consistency group, comprising:
receiving a first command from a master controller to generate a first data structure to indicate updates to a slave storage unit to form a consistency group initiated by the master controller, wherein data in the slave storage unit in the consistency group is transmitted consistent as of a point-in-time;
generating the first data structure in response to the first command;
transmitting complete to the master controller after generating the first data structure;
copying updated data in the slave storage unit indicated in a second data structure to ~~[[the]]~~ a remote storage, wherein the data is copied to form the consistency group, wherein updates to the slave storage unit received while copying the updated data indicated in the second data structure to form the consistency group are indicated in the first data structure; and
transmitting complete to the master controller after successfully copying the data in the slave storage unit indicated in the second data structure to the remote storage;
receiving a second command from the master controller to cause the copying of the slave storage unit data in the remote storage to a remote backup storage after transmitting the complete indicating that the slave storage unit data was successfully copied to the remote storage; and
transmitting a third command to a remote controller managing the remote storage to cause the copying of the slave storage unit data in the remote storage to the remote backup storage in response to receiving the third command.

12. (Original) The method of claim 11, further comprising:
indicating in the second data structure that data in the slave storage unit is not updated in response to transmitting the corresponding data to the remote storage;
indicating in the second data structure updated data in the slave storage unit that is indicated as updated in the first data structure in response to the second data structure not indicating any updated data to copy to the remote storage; and
indicating updates to data in the slave storage unit in the second data structure that are received after completing the copying of the data to the remote storage.

13. (Canceled)

14. (Original) The method of claim 11, further comprising:
queuing updates to the slave storage unit received while generating the first data structure;
applying the updates to the slave storage unit after generating the first data structure; and
indicating the queued updates applied to the slave storage unit in the first data structure.

15. (Canceled)

16. (Canceled)

17. (Currently Amended) The system of claim ~~[[16]]~~ 24, wherein the master controller also comprises one slave controller managing one slave storage unit including data to transmit to the remote storage.

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Currently Amended) The system of claim ~~[[19]]~~ 24, wherein the copy operation from the remote storage to the remote backup storage comprises a virtual copy operation.

22. (Currently Amended) The system of claim ~~[[15]]~~ 24, wherein the remote storage comprises a plurality of remote storage systems, wherein each remote storage system is coupled to one or more remote storage controllers, wherein each slave controller transmits data to one or more remote storage controllers to store the slave storage unit data in the remote storage system coupled to the remote storage controller, and wherein each storage unit comprises a volume of data.

23. (Canceled)

24. (Previously Presented) A system in communication with a master controller, a remote storage, a remote storage backup, and a remote controller managing the remote storage, comprising:

a slave storage unit;

means for receiving a first command from the master controller to generate a first data structure to indicate updates to the slave storage unit to form a consistency group initiated by the master controller, wherein data in the slave storage unit in the consistency group is transmitted consistent as of a point-in-time;

means for generating the first data structure in response to the first command;

means for transmitting complete to the master controller after generating the first data structure;

a second data structure indicating updated data in the slave storage unit;

means for copying updated data in the slave storage unit indicated in the second data structure to the remote storage, wherein the data is copied to form the consistency group, wherein updates to the slave storage unit received while copying the updated data indicated in the second data structure to form the consistency group are indicated in the first data structure; [[and]]

means for transmitting complete to the master controller after successfully copying the data in the slave storage unit to the remote storage;

means for receiving a second command from the master controller to cause the copying of the slave storage unit data in the remote storage to the remote backup storage after transmitting the complete indicating that the slave storage unit data was successfully copied to the remote storage; and

means for transmitting a third command to the remote controller managing the remote storage to cause the copying of the slave storage unit data in the remote storage to the remote backup storage in response to receiving the third command.

25. (Original) The system of claim 24, further comprising:
means for indicating in the second data structure that data in the slave storage unit is not updated in response to transmitting the corresponding data to the remote storage;
means for indicating in the second data structure updated data in the slave storage unit that is indicated as updated in the first data structure in response to the second data structure not indicating any updated data to copy to the remote storage; and
means for indicating updates to data in the slave storage unit in the second data structure that are received after completing the copying of the data to the remote storage.

26. (Canceled)

27. (Original) The system of claim 24, further comprising:
means for queuing updates to the slave storage unit received while generating the first data structure;
means for applying the updates to the slave storage unit after generating the first data structure; and
means for indicating the queued updates applied to the slave storage unit in the first data structure.

28. (Canceled)

29. (Currently Amended) The article of manufacture of claim ~~[[28]]~~ 38, wherein the remote storage is located at a remote site and wherein each slave storage unit is stored within a storage system attached to one slave controller.

30. (Canceled)

31. (Currently Amended) The article of manufacture of claim ~~[[30]]~~ 38, wherein the master controller also comprises one slave controller managing one slave storage unit including data to transmit to the remote storage.

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Currently Amended) The article of manufacture of claim ~~[[33]]~~ 38, wherein the copy operation from the remote storage to the remote backup storage comprises a virtual copy operation.

36. (Currently Amended) The article of manufacture of claim ~~[[28]]~~ 38, wherein the remote storage comprises a plurality of remote storage systems, wherein each remote storage system is coupled to one or more remote storage controllers, wherein each slave controller transmits data to one or more remote storage controllers to store the slave storage unit data in the remote storage system coupled to the remote storage controller, and wherein each storage unit comprises a volume of data.

37. (Canceled)

38. (Currently Amended) An article of manufacture for forming a consistency group of data, wherein the article of manufacture ~~receives communications from~~ is enabled to communicate with a master controller, a remote storage, remote backup storage, and a remote controller managing the remote storage and causes operations to be performed, the operations comprising

receiving a first command from the master controller to generate a first data structure to indicate updates to a slave storage unit to form a consistency group initiated by the master controller, wherein data in the slave storage unit in the consistency group is transmitted consistent as of a point-in-time;

generating the first data structure in response to the first command;

transmitting complete to the master controller after generating the first data structure;

copying updated data in the slave storage unit indicated in a second data structure to the remote storage, wherein the data is copied to form the consistency group, wherein updates to the slave storage unit received while copying the updated data indicated in the second data structure to form the consistency group are indicated in the first data structure; [[and]]

transmitting complete to the master controller after successfully copying the data in the slave storage unit indicated in the second data structure to the remote storage;

receiving a second command from the master controller to cause the copying of the slave storage unit data in the remote storage to the remote backup storage after transmitting the complete indicating that the slave storage unit data was successfully copied to the remote storage; and

transmitting a third command to the remote controller managing the remote storage to cause the copying of the slave storage unit data in the remote storage to the remote backup storage in response to receiving the third command.

39. (Original) The article of manufacture of claim 38, wherein the operations further comprise:

indicating in the second data structure that data in the slave storage unit is not updated in response to transmitting the corresponding data to the remote storage;

indicating in the second data structure updated data in the slave storage unit that is indicated as updated in the first data structure in response to the second data structure not indicating any updated data to copy to the remote storage; and

indicating updates to data in the slave storage unit in the second data structure that are received after completing the copying of the data to the remote storage.

40. (Canceled)

41. (Original) The article of manufacture of claim 38, wherein the operations further comprise:

queuing updates to the slave storage unit received while generating the first data structure;

applying the updates to the slave storage unit after generating the first data structure; and
indicating the queued updates applied to the slave storage unit in the first data structure.